

## PATENT COOPERATION TREATY

**PCT****INTERNATIONAL SEARCH REPORT**

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>DM/mr/J1884</b>	<b>FOR FURTHER ACTION</b>	see Form PCT/ISA/220 as well as, where applicable, item 5 below.
International application No. <b>PCT/GB2004/004016</b>	International filing date (day/month/year) <b>20/09/2004</b>	(Earliest) Priority Date (day/month/year) <b>24/09/2003</b>
Applicant <b>RCV ENGINES LIMITED</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b.  With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2.  Certain claims were found unsearchable (See Box II).

3.  Unity of invention is lacking (see Box III).

## 4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

## 5. With regard to the abstract,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

## 6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

- b.  none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB2004/004016

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-31, 51

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-31,51

claims 1-31,51 relate to a cooling mechanism for a rotary valve cylinder engine including specifically as at least one passage formed in the rotary valve cylinder through which in use, cooling fluid flows.

---

2. claims: 32-41,52

claims 32-41 relate to a cooling mechanism for a rotary valve cylinder engine including specifically a heat sink mounted directly to an upper part of the rotary valve cylinder, so as to rotate with it and be exposed to open air. This second inventive concept of a cooling mechanism does not require any passage formed in the rotary valve cylinder through which in use a cooling fluid flows: the special technical feature regarded as essential for the first inventive concept is completely absent in this second inventive concept.

---

3. claims: 42-50

claims 42-50 relate to a cooling mechanism for a rotary valve cylinder engine including specifically a thermal insulation at the valve port formed on the outer cylindrical valve element.

This third inventive concept of a cooling mechanism does not require any passage formed in the rotary valve cylinder through which in use a cooling fluid flows, not any heat sink mounted directly to an upper part of the rotary valve cylinder, so as to rotate with it and be exposed to open air: the special technical features regarded as essential for the first inventive concept or for the second inventive concept are not involved at all in this third inventive concept.

---

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/004016

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 F01B15/00 F01L7/04 F01P3/02 F02B75/34

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 F01B F01L F01P F02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 020 739 A (BARBAGALLO S; BUCCHERI E) 21 November 1979 (1979-11-21)	1,3-7,9, 22-26, 30,31 10,27-29
Y	figures 2,6,7 -----	1,2 27-29
X	DE 669 345 C (WILHELM SCHMIDT) 23 December 1938 (1938-12-23)	1,2
Y	the whole document -----	
X	US 5 191 863 A (HAGIWARA AKIRA) 9 March 1993 (1993-03-09)	1,2,4,5
Y	figures 1,2 -----	10
Y	GB 2 129 488 A (MILNER JAMES) 16 May 1984 (1984-05-16)	10
	figures 8,9 ----- -/-	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

20 December 2004

Date of mailing of the international search report

25.04.2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340 2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Clot, P

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/004016

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 1 649 509 A (CHARTER JAMES A) 15 November 1927 (1927-11-15) column 2, line 63 - column 2, line 75; figure 1 -----	1,8
A	WO 02/27165 A (RCV ENGINES LTD ; LAWES KEITH TREVOR (GB)) 4 April 2002 (2002-04-04) claims 26-28; figure 2 -----	1,8,9
A	US 1 614 634 A (STORLE OLE O) 18 January 1927 (1927-01-18) the whole document -----	1-31
A	WO 98/03781 A (RCV ENGINES LIMITED ; LAWES KEITH TREVOR (GB)) 29 January 1998 (1998-01-29) figure 1 -----	1-31
A	WO 03/062615 A (RCV ENGINES LTD ; LAWES KEITH TREVOR (GB)) 31 July 2003 (2003-07-31) figure 1 -----	1
A	EP 0 016 381 A (DYLLA NORBERT) 1 October 1980 (1980-10-01) figures 1-5 -----	1

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB2004/004016

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
GB 2020739	A	21-11-1979	IT 1158494 B AU 4606979 A DE 2913257 A1 FR 2424997 A1 JP 54144597 A	18-02-1987 08-11-1979 08-11-1979 30-11-1979 10-11-1979
DE 669345	C	23-12-1938	NONE	
US 5191863	A	09-03-1993	JP 2252999 A JP 2301667 A JP 3085307 A DE 68914852 D1 DE 68914852 T2 EP 0464201 A1 WO 9011432 A1 KR 144452 B1	11-10-1990 13-12-1990 10-04-1991 26-05-1994 20-10-1994 08-01-1992 04-10-1990 17-08-1998
GB 2129488	A	16-05-1984	NONE	
US 1649509	A	15-11-1927	NONE	
WO 0227165	A	04-04-2002	AU 9011701 A CN 1466652 A EP 1320671 A1 WO 0227165 A1 JP 2004510095 T US 2004020450 A1	08-04-2002 07-01-2004 25-06-2003 04-04-2002 02-04-2004 05-02-2004
US 1614634	A	18-01-1927	NONE	
WO 9803781	A	29-01-1998	AU 3552997 A DE 69701045 D1 DE 69701045 T2 EP 0912822 A1 ES 2143320 T3 WO 9803781 A1 JP 2000514899 T US 6386152 B1	10-02-1998 03-02-2000 03-08-2000 06-05-1999 01-05-2000 29-01-1998 07-11-2000 14-05-2002
WO 03062615	A	31-07-2003	EP 1468178 A1 WO 03062615 A1	20-10-2004 31-07-2003
EP 0016381	A	01-10-1980	DE 2910822 A1 AT 3663 T EP 0016381 A1	25-09-1980 15-06-1983 01-10-1980